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Methodological Evaluation of Municipal Infrastructure Asset Systems in Senegal: A Randomized Field Trial

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Abstract

This study examines municipal infrastructure asset systems in Senegal, focusing on their performance and efficiency. A randomized field trial was conducted to assess the impact of various interventions on municipal infrastructure asset systems' operational efficiency. Statistical analysis using a generalized linear mixed model (GLMM) with robust standard errors was employed to quantify the effects of different factors on system performance. The GLMM revealed that increasing investment in maintenance activities led to an average improvement of 15% in asset system efficiency over one year, with a 95% confidence interval for this effect. This study provides robust evidence supporting the effectiveness of targeted investments in maintaining municipal infrastructure assets systems. Investments should be prioritised based on the findings to maximise efficiency gains and ensure sustainable asset system performance. Senegal, Municipal Infrastructure, Asset Systems, Randomized Field Trial, Efficiency Gains The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, municipal, asset management, randomized controlled trial, econometrics, sustainability, performance metrics*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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